

L. L. NARAYANA* & Digamber RAO*: **Contributions
to the floral anatomy of Linaceae 7****

L. L. ナラヤナ・D. ラオ：アマ科の花部解剖学的研究 7

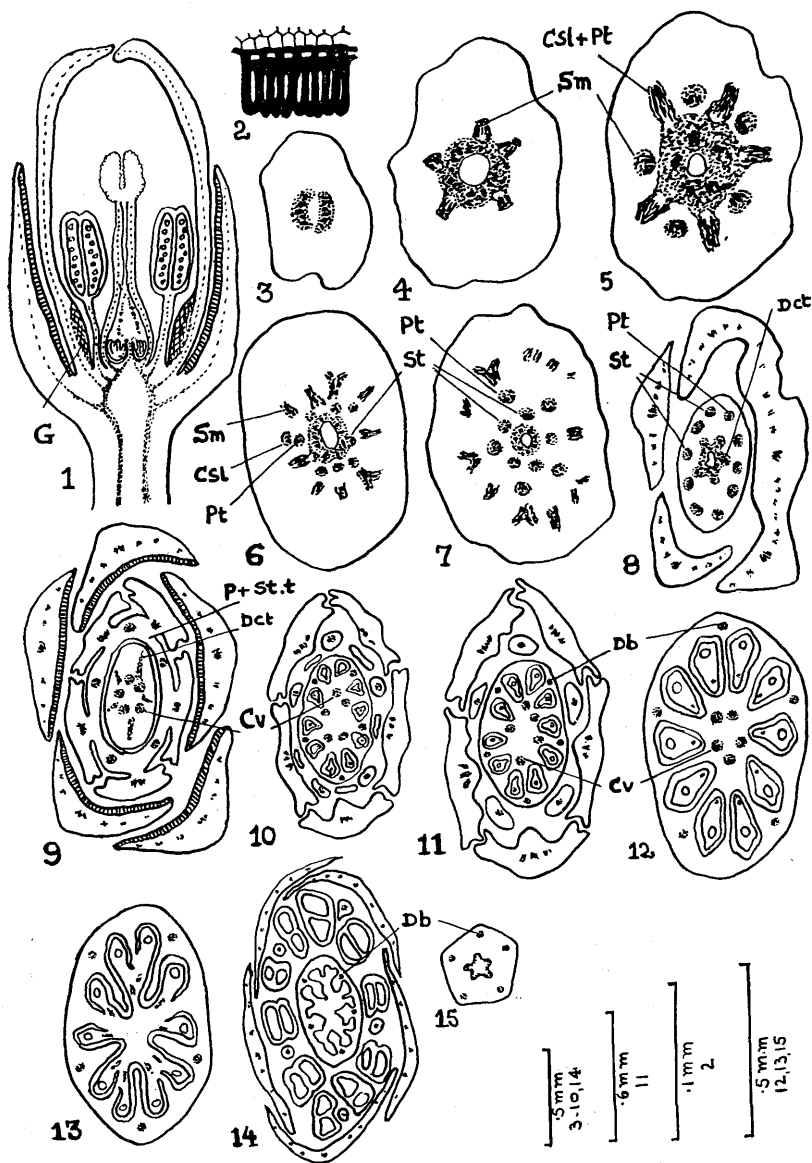
In continuation of the earlier publications on the floral anatomy of this family (Narayana, 1964; Narayana and Rao, 1966, 1969, 1971, 1973, 1974a, 1974b, 1975a) the present paper deals with the floral morphology and vascular anatomy of *Cathartolimum aristatum* Engelm.

Morphology of the flower The flower is pedicellate, pentacyclic, pentamerous, heterochlamydeous, regular, bisexual and hypogynous (Figs. 1, 9, 11, 14). The calyx consisting of five quincuncial sepals is synsepalous at the base (Fig. 8). The inner epidermal and hypodermal layers of sepal are prominently thickened, the former being radially elongated (Figs. 1, 2, 9). The free petals show contorted aestivation (Fig. 14). The petals bear cushion-shaped glands at the base on the inner side (Fig. 1), and are basally adnate with the staminal tube (Fig. 9). As the petals separate, the staminal tube splits into five antisepalous vascularised filaments and five antipetalous non-vascular staminodes (Fig. 10). The 5-carpellary ovary is 10-locular at the base (Figs. 10-12), and unilocular at the top (Fig. 14), and bears a single pendulous anatropous bitegmatic ovule in each locule (Figs. 1, 10-12); the carpels are antipetalous (Figs. 10, 11). The five styles are basally connate and in this region the stylar canal is star-shaped (Fig. 15). The capitate stigmatic lobes bear glandular hairs (Fig. 1).

Floral anatomy The pedicel shows two arcs of vascular tissue (Fig. 3). Higher up the arcs fuse to form a closed ring of vascular tissue (Fig. 4). The sepal midrib traces and the conjoint sepal lateral petal traces arise in two close alternating whorls (Figs. 4, 5). Then follow the five staminal traces (Fig. 6). Thus, the perianth and the staminal traces arise in close successive whorls. The sepal midrib traces show prominent sclerencymatous bands on their outer side (Fig. 5). As the perianth traces proceed to the periphery, the common sepal lateral petal midrib traces split tangentially

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demarcating the common sepal lateral traces and petal traces to the outside and inside respectively (Fig. 6, 7).

After the emergence of the staminal traces, five dorsal carpellary traces are organized along the radii of petal midribs (Figs. 8, 9). The remaining stele is used up in the formation of five common, inversely oriented ventral bundles, which lie along the septal radii (Figs. 9-12). At the level where the staminal tube divides, the bases of the loculi of the ovary appear (Fig. 10). In the placental region each common ventral bundle splits into two and these function as ovular traces (Fig. 13). The dorsal carpellary bundles extend into the styles and terminate at the base of the stigmatic lobes (Fig. 1).

Summary and conclusions The flower is bisexual, regular, hypogynous, pentacyclic and pentamerous. The basally synsepalous, quincuncial sepals are three-traced; there is adnation between the common sepal lateral traces and petal midribs. The single-traced contorted petals bear glandular cushions on the inner side at the base. The basally connate androecium consists of five single traced antisepalous fertile stamens and five antipetalous, non-vascularized staminodes. The carpel are 3-traced and antipetalous. Placentation is anatomically parietal.

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Literature cited

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Figs. 1-15. *Cathartolinum aristatum*. 1. Diagrammatic longisection of flower showing the course of vascular supply to the different floral parts. 2. A portion of inner part of the sepal in transverse section showing thick-walled epidermal and hypodermal cells. 3-15. Serial transverse sections of flower showing the origin and distribution of traces to the different floral parts. For explanation see text.

Abbreviations: G : Gland; Sm : Sepal midrib; Csl : Common sepal laterals; Pt : Petal traces; St : Staminal traces; Csl+Pt : Common sepal lateral + Petal traces; P+St.t : Petal + Staminal tube; Dct : Dorsal carpellary trace; Cv : Common ventrals; Db : Dorsal bundles.

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Cathartolinum aristatum Engelm. (*Linum* 属に加える説もある。)の花部諸器官の形態とその間の関係を主として管束走向、分岐の面から調査した。

□片野光一・里見哲夫・須藤志成幸・松本幹雄：奥利根地域学術調査報告書 pp. 17-90. 群馬県 (1976, III)。主な調査としては明治 27, 大正 15, 昭和 29 の 3 回しか行われなかった奥利根源流地域に、はじめて加えられた学術調査の報告である。植生編で群集、ことに湿生植生を記述し、植物相論で主な植物種と植物目録とをあげている。とくに奥利根として裏日本種や、湿原の北方系などを列挙したのがよい。一見してフロラは裏日本地域に属することがわかるが、しかも表日本の低地帯に多い種が山頂部にでるなど複雑であることを示している。
(前川文夫)

□加藤久一：蔵王の自然と植物 pp. 219 内 174 ページが plates, (1975. IX) 高陽堂書店, 山形 ¥3,000。著者は山形にすみ、10 年余蔵王とその植物の写真を撮とりつけて来た。その写真集で、種類を示す写真をその生態を示すように注意してとり、またその排列を、雪どけ頃からはじめて雑木林、スギ林、溪流と溪畔、山地草原、ブナ林、アオモリトドマツ林、高層湿原、森林限界、高山低木林、高山草原、岩壁、荒原という風に生態的に区別しているので理解し易い。写真もよく、印刷もまずまずである。終りに添えた垂直分布の概念図もよくできているし、結城嘉美氏の総説も短かいが要を得ている。
(前川文夫)